

Claims

1. A water-based setting and hardening accelerator for hydraulic binders, comprising sulfate, aluminum and organic acid, with the molar ratio of aluminum to the organic acid being less than 0.65.
2. The water-based setting and hardening accelerator as claimed in claim 1, characterized in that it comprises (in % by weight): from 14.4 to 24.9% of sulfate, from 4 to 9.7% of aluminum and 12-30% of organic acid.
3. The water-based setting and hardening accelerator as claimed in claim 2, characterized in that the Al content of the accelerator reported as Al_2O_3 is less than 14% and/or less than 13% and/or less than 12% of Al_2O_3 .
4. The water-based setting and hardening accelerator for hydraulic binders as claimed in any of the preceding claims which can be produced from at least aluminum sulfate ($\text{Al}_2(\text{SO}_4)_3$) and/or sulfuric acid, aluminum hydroxide ($\text{Al}(\text{OH})_3$) and organic acid, with amorphous aluminum hydroxide being particularly preferably used as aluminum hydroxide.
5. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that the molar ratio of aluminum to the organic acid is less than 0.60, in particular less than 0.55.
6. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that the molar ratio of aluminum to the organic acid is greater than 0.38.

7. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that (in % by weight) the proportion of aluminum sulfate used in production of the accelerator is 30-50% and/or the proportion of aluminum hydroxide is 5-20% and/or the proportion or organic acid is 12-30%.
8. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that it comprises (in % by weight): from 0 to 4.2% and/or from 0.8 to 2.9% and/or from 1.3 to 2.1% of alkaline earth metal.
9. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that (in % by weight) 1-10% alkaline earth metal hydroxide and/or 1-10% of alkaline earth metal oxide are present in the production of the accelerator.
10. The water-based setting and hardening accelerator as claimed in claim 8 or 9, characterized in that the alkaline earth metal is magnesium.
11. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that (in % by weight) 0-10% of alkanolamine and/or 0-5.0% of plasticizer and/or 0-20% of stabilizer are present in the production of the accelerator.
12. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that the pH of the accelerator is in the range from 3 to 4.

13. The water-based setting and hardening accelerator as claimed in any of the preceding claims, characterized in that the organic acid component comprises a formic acid and/or an acetic acid.
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14. A process for producing a setting and hardening accelerator as claimed in any of claims 1 to 13, characterized in that in the production of the aqueous solution and the addition of the components in the production of the solution the solution heats up to a temperature in the range from room temperature to 100°C.
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15. A process for producing a setting and hardening accelerator as claimed in any of claims 8 to 13, characterized in that alkaline earth metal hydroxide and/or alkaline earth metal oxide, organic acid and the further components are added in any order to water, resulting in the mixture heating up substantially.
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16. The process for producing a setting and hardening accelerator as claimed in claim 15, characterized in that aluminum sulfate is produced by reaction of a basic aluminum compound with sulfuric acid.
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17. The process for producing a setting and hardening accelerator as claimed in claim 15 or 16, characterized in that the mixture heats up to a temperature of up to 100°C.
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18. The process for producing a setting and hardening accelerator as claimed in claim 15 or 16, characterized in that the water is initially provided in unheated form.
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19. A method of accelerating the setting and hardening of hydraulic binders and also of mortar or

concrete produced therefrom, characterized in that
a mixture comprising hydraulic binders is admixed
with a setting and hardening accelerator as
claimed in any of claims 1 to 13 in an amount of
5 from 0.1 to 10% by weight, based on the weight of
the hydraulic binder.

20. The use of the setting and hardening accelerator
as claimed in any of claims 1 to 13 in a sprayed
10 concrete or sprayed mortar.